



SEQUENCE LISTING

<110> The Scripps Research Institute
Barbas, Carlos
Stege, Justin
Guan, Xueni
Dalmia, Bipin

<120> Methods and compositions to modulate
expression in plants

<130> 27801-20014.20

<140> 09/765,555

<141> 2001-01-19

<150> 09/620,897

<151> 2000-07-21

<150> US 60/177,468

<151> 2000-01-21

<160> 75

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<211> 532

<212> DNA

<213> Artificial Sequence

<220>

<223> Promoter CsVMV

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<223> Zinc finger protein 2C7 binding site

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 <223> Promoter pc7rbTATA

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 <223> pND3008 coding region

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<211> 3069

<212> DNA

<213> Artificial Sequence

<220>

<223> pND3018 coding region

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<223> ZFPm1 from -68 to -85

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18

<210> 10
<211> 18
<212> DNA
<213> Artificial Sequence

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<223> ZFPm2 from -65 to -82

<400> 10
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<210> 11
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> ZFP from 294 to 317

<400> 11
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24

<210> 12
<211> 18
<212> DNA
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<220>
<223> ZFPm3 from 311 to 294

<400> 12
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18

<210> 13
<211> 18
<212> DNA
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<223> ZFPm4 from 317 to 300

<400> 13
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<210> 14
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<213> Artificial Sequence

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<223> Partial sequence of pMal-m1 and zinc finger protein ZFPm1

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<210> 15

<211> 3300

<212> DNA

<213> Artificial Sequence

<220>

<223> Partial sequence of pMal-m2 and zinc finger
protein ZFPm2

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<210> 16

<211> 3300

<212> DNA

<213> Artificial Sequence

<220>

<223> PArTial sequence of pMal-m3 and zinc finger
protein ZFPm3

<400> 16

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<210> 17

<211> 3300

<212> DNA

<213> Artificial Sequence

<220>

<223> Partial sequence of pMal-m4 and zinc finger
protein ZFPm4

<400> 17

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<211> 3300

<212> DNA

<213> Artificial Sequence

<220>

<223> Parial sequence of pMal-Ap3 and zinc finger
protein ZFPap3

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<211> 58

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<213> Artificial Sequence

<220>

<223> Oligo m12

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 <213> Artificial Sequence

 <220>
 <223> Oligo hHD-I

 <400> 24
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 <210> 25
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<220>
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 <223> Oligo c5p1-g

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 <223> Oligo c5p3-g

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 <223> Oligo B3c2

 <400> 28
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 <223> Oligo e2c-g

 <400> 29
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 <220>
 <223> Primer Ap3-F

<400> 30
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 <210> 31
 <211> 20
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 <220>
 <223> Primer NZlib5'

 <400> 31
 ggcccaggcg gccctcgagc 20

 <210> 32
 <211> 44
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer Ap3f4-R

 <400> 32
 ctctctaat acgactcact atagggacac tcacctagcc tctg 44

 <210> 33
 <211> 21
 <212> DNA
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 <220>
 <223> Primer m4f3

 <400> 33
 cctcgcaaga tcacgacaat c 21

 <210> 34
 <211> 27
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 <220>
 <223> PCR probe for AP3

 <400> 34
 ccatttcac ctcgaagacga cgcagct 27

 <210> 35
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer for AP3 (forward)

 <400> 35

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22

<210> 36

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer for AP3 (reverse)

<400> 36

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<210> 37

<211> 44

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide

<400> 37

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<210> 38

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<212> PRT

<213> Artificial Sequence

<220>

<223> ZFPml

<400> 38

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Cys	Gly	Lys	Ser	Phe	Ser	Asp	Pro	Gly	His	Leu	Val	Arg	His	Gln	Arg
			20					25					30		
Thr	His	Thr	Gly	Glu	Lys	Pro	Tyr	Lys	Cys	Pro	Glu	Cys	Gly	Lys	Ser
			35					40					45		
Phe	Ser	Gln	Arg	Ala	His	Leu	Glu	Arg	His	Gln	Arg	Thr	His	Thr	Gly
			50				55				60				
Glu	Lys	Pro	Tyr	Lys	Cys	Pro	Glu	Cys	Gly	Lys	Ser	Phe	Ser	Gln	Ser
65					70				75					80	
Ser	Asn	Leu	Val	Arg	His	Gln	Arg	Thr	His	Thr	Gly	Glu	Lys	Pro	Tyr
				85					90					95	
Ala	Cys	Pro	Glu	Cys	Gly	Lys	Ser	Phe	Ser	Arg	Ser	Asp	Asn	Leu	Val
			100					105					110		
Arg	His	Gln	Arg	Thr	His	Thr	Gly	Glu	Lys	Pro	Tyr	Lys	Cys	Pro	Glu
			115				120					125			
Cys	Gly	Lys	Ser	Phe	Ser	Arg	Ser	Asp	Asn	Leu	Val	Arg	His	Gln	Arg
			130				135				140				
Thr	His	Thr	Gly	Glu	Lys	Pro	Tyr	Lys	Cys	Pro	Glu	Cys	Gly	Lys	Ser
145					150				155					160	
Phe	Ser	Gln	Ala	Gly	His	Leu	Ala	Ser	His	Gln	Arg	Thr	His	Thr	Gly
				165					170					175	
Lys	Lys	Thr	Ser	Gly	Gln	Ala	Gly								
				180											

<210> 39
 <211> 184
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> ZFPm2

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 Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
 35 40 45
 Phe Ser Gln Ser Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly
 50 55 60
 Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Arg Ser
 65 70 75 80
 Asp Asn Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
 85 90 95
 Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val
 100 105 110
 Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
 115 120 125
 Cys Gly Lys Ser Phe Ser Gln Ala Gly His Leu Ala Ser His Gln Arg
 130 135 140
 Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
 145 150 155 160
 Phe Ser Arg Ser Asp Asn Leu Val Arg His Gln Arg Thr His Thr Gly
 165 170 175
 Lys Lys Thr Ser Gly Gln Ala Gly
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<210> 40
 <211> 184
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> ZFPm3

<400> 40
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 Cys Gly Lys Ser Phe Ser Asp Pro Gly His Leu Val Arg His Gln Arg
 20 25 30
 Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
 35 40 45
 Phe Ser Thr Ser Gly Ser Leu Val Arg His Gln Arg Thr His Thr Gly
 50 55 60
 Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser
 65 70 75 80
 Ser Ser Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
 85 90 95
 Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser Ser Ser Leu Val

			100					105					110				
Arg	His	Gln	Arg	Thr	His	Thr	Gly	Glu	Lys	Pro	Tyr	Lys	Cys	Pro	Glu		
		115					120					125					
Cys	Gly	Lys	Ser	Phe	Ser	Asp	Ser	Arg	Asp	Leu	Ala	Arg	His	Gln	Arg		
	130					135					140						
Thr	His	Thr	Gly	Glu	Lys	Pro	Tyr	Lys	Cys	Pro	Glu	Cys	Gly	Lys	Ser		
145					150					155					160		
Phe	Ser	Gln	Ser	Ser	His	Leu	Val	Arg	His	Gln	Arg	Thr	His	Thr	Gly		
			165					170						175			
Lys	Lys	Thr	Ser	Gly	Gln	Ala	Gly										
			180														

<210> 41
 <211> 184
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> ZFPm4

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			20					25					30				
Thr	His	Thr	Gly	Glu	Lys	Pro	Tyr	Lys	Cys	Pro	Glu	Cys	Gly	Lys	Ser		
		35					40					45					
Phe	Ser	Gln	Ser	Ser	Ser	Leu	Val	Arg	His	Gln	Arg	Thr	His	Thr	Gly		
	50					55					60						
Glu	Lys	Pro	Tyr	Lys	Cys	Pro	Glu	Cys	Gly	Lys	Ser	Phe	Ser	Asp	Cys		
65				70					75					80			
Arg	Asp	Leu	Ala	Arg	His	Gln	Arg	Thr	His	Thr	Gly	Glu	Lys	Pro	Tyr		
				85					90					95			
Ala	Cys	Pro	Glu	Cys	Gly	Lys	Ser	Phe	Ser	Gln	Ser	Ser	Ser	Leu	Val		
		100						105					110				
Arg	His	Gln	Arg	Thr	His	Thr	Gly	Glu	Lys	Pro	Tyr	Lys	Cys	Pro	Glu		
	115						120					125					
Cys	Gly	Lys	Ser	Phe	Ser	Arg	Ser	Asp	Asn	Leu	Val	Arg	His	Gln	Arg		
	130					135					140						
Thr	His	Thr	Gly	Glu	Lys	Pro	Tyr	Lys	Cys	Pro	Glu	Cys	Gly	Lys	Ser		
145					150					155					160		
Phe	Ser	Thr	Ser	Gly	His	Leu	Val	Arg	His	Gln	Arg	Thr	His	Thr	Gly		
			165					170						175			
Lys	Lys	Thr	Ser	Gly	Gln	Ala	Gly										
			180														

<210> 42
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 <213> Artificial Sequence

<220>
 <223> ZFPAP3

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 20 25 30
 Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
 35 40 45
 Phe Ser Gln Ser Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly
 50 55 60
 Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser
 65 70 75 80
 Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
 85 90 95
 Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Thr Ser Gly Ser Leu Val
 100 105 110
 Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
 115 120 125
 Cys Gly Lys Ser Phe Ser Gln Ser Ser His Leu Val Arg His Gln Arg
 130 135 140
 Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
 145 150 155 160
 Phe Ser Thr Ser Gly Asn Leu Val Arg His Gln Arg Thr His Thr Gly
 165 170 175
 Lys Lys Thr Ser Gly Gln Ala Gly
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<210> 43
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<210> 45
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<220>
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<400> 45
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 1 5

<210> 46
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 <220>
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 <400> 46
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 1 5

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 1 5

 <210> 48
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 <400> 48
 Ser Gln Ser Gly Asp Leu Arg Arg
 1 5

 <210> 49
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 <210> 57
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 <400> 57
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 <210> 58
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 <400> 58
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 1 5

 <210> 59
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 <400> 59
 Ser Arg Ser Asp Val Leu Val Arg
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 <210> 60
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<400> 60
 Ser Arg Lys Asp Ser Leu Val Arg
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<210> 61
 <211> 8
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<400> 61
 Ser Thr Ser Gly Ser Leu Val Arg
 1 5

<210> 62
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<220>
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<400> 62
 Ser Gln Ala Gly His Leu Ala Ser
 1 5

<210> 63
 <211> 330
 <212> DNA
 <213> Artificial sequence

<220>
 <223> ZFPm2a

<400> 63
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 ggtgaaaaac cgtataaatg ccagaggtgc ggcaaatctt ttagccaggc cggccacctg 180
 gccagccatc aacgcactca tactggcgag aagccatata aatgtccaga atgtggcaag 240
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 agtggccagg ccggccagct cctcctctc 330

<210> 64
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 <223> ZFP2b

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gtgcgccatc	aacgcactca	tactggcgag	aagccataca	aatgtccaga	atgtggcaag		240
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<210> 65

<211> 18

<212> DNA

<213> Artificial sequence

<220>

<223> Oligonucleotide

<400> 65

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18

<210> 66

<211> 5731

<212> DNA

<213> Artificial sequence

<220>

<223> 2C7-SID

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cccgccatt	gacgtcaata	atgacgtatg	ttcccatagt	aacgccaata	gggactttcc		420
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 <223> Primer F3-b2

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 cacacaggcg agaagccttt tgccctgtgac atttgtggga ggaagtttgc caggagtgat 240
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 20 25 30

His Thr Gly Gln Lys Pro Phe Gln Cys Arg Ile Cys Met Arg Asn Phe
 35 40 45
 Ser Arg Ser Asp His Leu Thr Thr His Ile Arg Thr His Thr Gly Glu
 50 55 60
 Lys Pro Phe Ala Cys Asp Ile Cys Gly Arg Lys Phe Ala Arg Ser Asp
 65 70 75 80
 Glu Arg Lys Arg His Thr Lys Ile His Leu Arg Gln Lys Asp Ser Arg
 85 90 95
 Thr Ser Gly Gln Ala Gly Gln Ala Ser
 100 105

<210> 75

<211> 184

<212> PRT

<213> Artificial sequence

<220>

<223> Zinc finger protein ZFPml

<400> 75

Ala Gln Ala Ala Leu Glu Pro Gly Glu Lys Pro Tyr Ala Cys Pro Glu
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 Cys Gly Lys Ser Phe Ser Asp Pro Gly His Leu Val Arg His Gln Arg
 20 25 30
 Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
 35 40 45
 Phe Ser Gln Arg Ala His Leu Glu Arg His Gln Arg Thr His Thr Gly
 50 55 60
 Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser
 65 70 75 80
 Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
 85 90 95
 Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val
 100 105 110
 Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
 115 120 125
 Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val Arg His Gln Arg
 130 135 140
 Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
 145 150 155 160
 Phe Ser Gln Ala Gly His Leu Ala Ser His Gln Arg Thr His Thr Gly
 165 170 175
 Lys Lys Thr Ser Gly Gln Ala Gly
 180